



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,684	10/28/2003	Mark Pereira	NVID-P000621	5051
7590 07/12/2007 WAGNER, MURABITO & HAO LLP Third Floor Two North Market Street San Jose, CA 95113			EXAMINER PAUL, DISLER	
			ART UNIT 2615	PAPER NUMBER
			MAIL DATE 07/12/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/695,684	Applicant(s) PEREIRA, MARK	
	Examiner Disler Paul	Art Unit 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☒ Claim(s) 13 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, filed May, 14, 2007, with respect to the rejection(s) of claim(s) 1, 7, 14 of the non-audible signal and object limitation under Kataoka have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Foxlin.

Claim Objections

2. Claim 13 is objected to because of the following minor informality: applicant is advised to replace "daid relative position" with "said relative position". Appropriate correction is required.
3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
4. Claims 1, 7-8, 10, 12-14, 17-19 are rejected under 35 U.S.C. 102(B) as being anticipated by Foxlin ("US 6,176,837 B1").

Re claim 1, Foxlin discloses a sound wave-based tracking system ("fig. 1-2, 5") comprising: a speaker at a fixed-location for transmitting a sound wave signal having a given

frequency above an audible range ("fig.5 (550); col. 5 line 60-66"); a plurality of microphones mounted upon an object for receiving said signal ("fig.5 (520); fig.1; col. 1 line 42-50"); a computing device for determining at least one of a position and orientation of said object as a function of a delay of said received signals by each plurality of microphones (col. 1 line 60-67; col. 2 line 5-15; fig.1 (130)), col. 3 line 55-65).

Re claim 7, with respect has been analyzed and rejected with respect to claim 1 above.

Re claim 8, the method of tracking according to claim 7, further comprising: transmitting said first non-audible signal from said first speaker; transmitting said first non-audible signal from a second speaker; receiving said non-audible signal from said speaker at said plurality of microphones (fig.1(122,110) received plurality of signals from transducers). While, Foxlin disclose of the above, he is silent to the specific of the first period and second period of time between the speakers. However, he did disclose of the signal measurement based on inertia measurement between the separations of speaker and further of the delaying factors (col. 5 line 5-25; fig.9), thus, with the above disclosure it is inherent of the existence of the time delays between the first and second speaker.

Foxlin further disclose of the determining a plurality of delay of said received first non-audible signal for each of said plurality of microphones during said first and second period of time and determining at least one of said relative position and said relative orientation of said plurality of microphones as a function is said determined plurality of delays(col. 1 line 60-67; col. 2 line 5-15; fig.1 (130)), col. 3 line 55-65).

Re claim 10, the method of tracking according to claim 7, further comprising: transmitting a second non-audible signal from a second speaker; receiving said second non-audible speaker at said plurality of microphones and determining a delay of said received second non-audible signal for each of the plurality of microphones and determining at least one of said relative position and said relative orientation of said plurality of microphones further as a function of said determined delay of said received second non-audible signal (see claim 1 rejections and further (fig.1 for plurality of transducers of emitting non-audible signals to microphones)).

Re claim 12, the method of claim 7, wherein further comprising controlling a cursor of a computing device as a function of said determined at least one of said relative position and said relative orientation (fig.2; col.4 line 40-50).

Re claim 19, has been analyzed and rejected with respect to claim 12 above.

Re claim 13, the method of tracking according to claim 7, further comprising controlling an application executing on a computing device as a function of said determined at least one of said relative position and said relative orientation, (*col. 1 line 60-67; col. 4 line 40-50.*).

Re claim 14, Foxlin discloses a computing system ("fig. 1, 2, 5") comprising: a speaker for generating a sound at a frequency above the audible range ("fig. 5 (122)"); a computer device coupled to control said speaker and couple to received signals from said plurality of microphones (fig.1 (110), said computing device for determining at least one of a relative

position and a relative orientation of said assembly based on delay differences of said signals(col. 1 line 60-67; col. 2 line 5-15; fig.1 (130)), col. 3 line 55-65).

Re claim 17, the computing system as described in claim 14, wherein said plurality of microphones comprise two microphones and wherein said determined at least one of said relative position and said relative orientation of is within a single spatial plane ("fig. 1/110-microphones being positioned in single spatial plane").

Re claim 18, the computing system as described in claim 14, wherein said plurality of microphones comprise three microphones ("fig. 1/110") and wherein said determined at least one of said relative position and said relative orientation is within two spatial planes ("fig. 1/with mics may be view in multi spatial planes with multi sensors").

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3-4, 9, 11, 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foxlin ("US 6,176,837 B1") and further in view of Kataoka ("US 2002/0181723 A1").

Re claim 3, The sound-wave based tracking system according to claim 1, However, Foxlin fail to disclose of the specific wherein said signal comprises a marker and wherein said delay is determined as a function of a delay between said marker received by each of the plurality of microphones. However, Kataoka disclose a microphone detecting device wherein the similar concept of having a signal comprises a marker ("fig. 7-8; page 1[0007] line 8-12-different amplitude sound is being capture as function of time (marker), also please see page 1[0008]") and wherein said delay is determined as a function of receipt of said marker by each of said plurality of microphones ("page 1[0010] lien 1-4; fig. 1/5; fig. 6-8-error is delay between each received sound signals") for the purpose of estimating the sound source direction. Thus, taking the combined teaching of Foxlin and now Kataoka as a whole, it would have been obvious for one of the ordinary skill in the art to modify Foxlin by incorporating the signal comprises a marker and wherein said delay is determined as a function of a delay between said marker received by each of the plurality of microphones for the purpose of estimating the sound source direction.

Re claim 21, has been analyzed and rejected with respect to claim 3 above.

Re claim 4, The sound-wave tracking system according to claim 1, However, Foxlin does not expressively disclose of the detail wherein in said delay is determined as a function of time delay of between said signal received by each of said plurality of microphones. But, Kataoka did

Art Unit: 2615

disclose of a system wherein he disclose of the detail wherein in said delay is determined as a function of time delay of between said signal received by each of said plurality of microphones ("page 3[0038] line 12-15; page 1[0007] line 1-3; page 1[0008]") for the purpose of determining the sound source location. Thus, taking the combined teaching of Foxlin and Kataoka as a whole, it would have been obvious for one of the ordinary skill in the art to have modified Foxlin by incorporating the detail wherein in said delay is determined as a function of time delay of between said signal received by each of said plurality of microphones for the purpose of determining the sound source location.

Re claim 9, the method of tracking according to claim 7, But, Foxlin fail to disclose of the specific wherein in said first signal comprising a sinusoidal signal, But, Kataoka did disclose of a system wherein the signal comprising a sinusoidal signal ("fig. 6-8- sinusoidal signal being captured and track by microphones; page 1/(formula(2-3))") for the purpose of enhancing accuracy in directional estimation of the signal. Thus, taking the combined teaching of Foxlin and Kataoka as a whole, it would have been obvious for one of the ordinary skill in the art to modify Foxlin by incorporating the system wherein the signal comprising a sinusoidal signal for the purpose of enhancing accuracy in directional estimation of the signal.

Re claims 11,20 in regard to second non-audible signal, have been analyzed and rejected with respect to claim 9 above.

Re claim 22, the audio-based tracking system according to claim 1, But, Foxlin fail to disclose of the specific wherein said delay is determined as a function of time delay of said signal received by each of said plurality of microphones relative to a reference signal. However, Kataoka disclose of a system wherein the delay is determined as a function of time delay of said signal received by each of said plurality of microphones relative to a reference signal (page 1[0007-8]) for the purpose enhancing accuracy in signal recognition. thus, taking the combined teaching of Foxlin and Kataoka as a whole, it would have been obvious for one of the ordinary skill in the art to have modified Foxlin by incorporating the delay is determined as a function of time delay of said signal received by each of said plurality of microphones relative to a reference signal for the purpose enhancing accuracy in signal recognition.

1. Claims 6,15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foxlin ("US 6,176,837 B1), and further in view of Cristiamo Avigni ("US 2003/0142829 A1").

Re claim 6, the audio-based tracking system according to claim 1, however, Foxlin fail to disclose the said plurality of said microphones communicate wirelessly with said computing device. Avigni discloses a system for capturing sound from a moving object in which plurality of microphones communicate wirelessly with computing device ("fig.2/10, fig.3-(plurality of microphones) with computing device (fig.2/100;fig.10/100); page 1[0005] line 11-12") for the purpose of wirelessly transmitting such signals to location remote from the moving object. Therefore taking the teaching of Foxlin and Avigni as a whole, it would have been obvious for one skill in the ordinary art to incorporate the said plurality of said microphones communicate wirelessly with said computing device in Foxlin for the purpose of wirelessly transmitting such signals to location remote from the moving object.

Re claim 15 has been analyzed and rejected with respect to claim 6 above.

Re claim 16, the computing device as described in claim 14, wherein said computing device is a game console ("col. 14 line 1-25/system may be used in virtual reality") however, Foxlin fail to disclose wherein said game console is wirelessly coupled to said plurality of microphones. Avigni discloses a system for capturing sound from a moving object in which plurality of microphones communicate wirelessly with computing device ("fig. 2/10, fig. 3-(plurality of microphones) with computing device (fig. 2/100; fig. 10/100); page 1[0005] line 11-12") for the purpose of wirelessly transmitting such signals to location remote from the moving object. Therefore taking the teaching of Foxlin and Avigni as a whole, it would have been obvious for one skill in the ordinary art to incorporate the said plurality of said microphones communicate wirelessly with said computing device in Foxlin for the purpose of wirelessly transmitting such signals to location remote from the moving object.

Re claim 12, the method of claim 7, wherein further comprising controlling a cursor of a computing device as a function of said determined at least one of said relative position and said relative orientation (fig. 2; col. 4 line 40-50).

Re claim 19, has been analyzed and rejected with respect to claim 12 above.


Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Disler Paul whose telephone number is 571-270-1187. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DP


VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2200